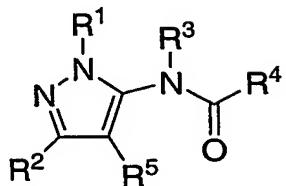


## WHAT IS CLAIMED IS:

## 1. A compound of the formula I:



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wherein:

R<sup>1</sup> is selected from the group consisting of:

- (1) hydrogen,
- (2) C<sub>1</sub>-6alkyl, which is unsubstituted or substituted with halogen, hydroxyl or phenyl,
- 10 (3) C<sub>3</sub>-7cycloalkyl, which is unsubstituted or substituted with halogen, hydroxyl or phenyl, and
- (4) phenyl, which is unsubstituted or substituted with one or more substituents independently selected from:
  - (a) -C<sub>1</sub>-6alkyl,
  - (b) -O-C<sub>1</sub>-6alkyl,
  - (c) halo,
  - (d) hydroxy,
  - (e) trifluoromethyl,
  - (f) -OCF<sub>3</sub>,
  - 20 (g) -CO<sub>2</sub>R<sup>9</sup>,

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wherein R<sup>9</sup> is independently selected from:

- (i) hydrogen,
- (ii) -C<sub>1</sub>-6alkyl, which is unsubstituted or substituted with 1-6 fluoro,
- (iii) benzyl, and
- (iv) phenyl,
- (h) -NR<sup>10</sup>R<sup>11</sup>,

wherein R<sup>10</sup> and R<sup>11</sup> are independently selected from:

- (i) hydrogen,
- (ii) -C<sub>1</sub>-6alkyl, which is unsubstituted or substituted with 1-6 fluoro,
- (iii) -C<sub>5</sub>-6cycloalkyl,

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- (iv)    benzyl,
- (v)    phenyl,
- (vi)   -S(O)<sub>2</sub>-C<sub>1-6</sub>alkyl,
- (vii)   -S(O)<sub>2</sub>-benzyl, and
- (viii)   -S(O)<sub>2</sub>-phenyl,

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- (i)    -CONR<sup>10</sup>R<sup>11</sup>, and
- (j)    -NO<sub>2</sub>;

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(5) heterocycle, wherein heterocycle is selected from:

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benzoimidazolyl, benzimidazolonyl, benzofuranyl, benzofurazanyl, benzopyrazolyl, benzotriazolyl, benzothiophenyl, benzoxazolyl, carbazolyl, carbolinyl, cinnolinyl, furanyl, imidazolyl, indolinyl, indolyl, indolazinyl, indazolyl, isobenzofuranyl, isoindolyl, isoquinolyl, isothiazolyl, isoxazolyl, naphthpyridinyl, oxadiazolyl, oxazolyl, oxazoline, isoxazoline, oxetanyl, pyranyl, pyrazinyl, pyrazolyl, pyridazinyl, pyridopyridinyl, pyridazinyl, pyridyl, pyrimidyl, pyrrolyl, quinazolinyl, quinolyl, quinoxalinyl, tetrahydropyranyl, tetrazolyl, tetrazolopyridyl, thiadiazolyl, thiazolyl, thienyl, triazolyl, azetidinyl, 1,4-dioxanyl, hexahydroazepinyl, piperazinyl, piperidinyl, pyridin-2-onyl, pyrrolidinyl, morpholinyl, thiomorpholinyl, dihydrobenzoimidazolyl, dihydrobenzofuranyl, dihydrobenzothiophenyl, dihydrobenzoxazolyl, dihydrofuranyl, dihydroimidazolyl, dihydroindolyl, dihydroisooxazolyl, dihydroisothiazolyl, dihydrooxadiazolyl, dihydrooxazolyl, dihydropyrazinyl, dihydropyrazolyl, dihydropyridinyl, dihydropyrimidinyl, dihydropyrrolyl, dihydroquinolinyl, dihydrotetrazolyl, dihydrothiadiazolyl, dihydrothiazolyl, dihydrothienyl, dihydrotriazolyl, dihydroazetidinyl, methylenedioxybenzoyl, tetrahydrofuranyl, and tetrahydrothienyl, and N-oxides thereof, which is unsubstituted or substituted with one or more substituents independently selected from:

25

- (a)    -C<sub>1-6</sub>alkyl,
- (b)    -O-C<sub>1-6</sub>alkyl,
- (c)    halo,
- (d)    hydroxy,
- (e)    phenyl,
- (f)    trifluoromethyl,
- (g)    -OCF<sub>3</sub>,
- (h)    -CO<sub>2</sub>R<sup>9</sup>,

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- (i) -NR<sup>10</sup>R<sup>11</sup>, and
- (j) -CONR<sup>10</sup>R<sup>11</sup>;

R<sup>2</sup> and R<sup>5</sup> are independently selected from the group consisting of:

- 5 (1) hydrogen,
- (2) C<sub>1</sub>-6alkyl, which is unsubstituted or substituted with halogen, hydroxyl or phenyl,
- (3) C<sub>3</sub>-7cycloalkyl, which is unsubstituted or substituted with halogen, hydroxyl or phenyl, and
- (4) phenyl, which is unsubstituted or substituted with one or more substituents  
10 independently selected from:
  - (a) -C<sub>1</sub>-6alkyl, which is unsubstituted or substituted with  
-NR<sup>10</sup>R<sup>11</sup>,
  - (b) -O-C<sub>1</sub>-6alkyl,
  - (c) halo,
  - 15 (d) hydroxy,
  - (e) trifluoromethyl,
  - (f) -OCF<sub>3</sub>;
  - (g) -CO<sub>2</sub>R<sup>9</sup>,
  - (h) -NR<sup>10</sup>R<sup>11</sup>,
  - (i) -C(O)NR<sup>10</sup>R<sup>11</sup>, and
  - (j) -NO<sub>2</sub>,
- 20 (5) heterocycle, wherein heterocycle is selected from:  
benzimidazolyl, benzimidazolonyl, benzofuranyl, benzofurazanyl,  
benzopyrazolyl, benzotriazolyl, benzothiophenyl, benzoxazolyl, carbazolyl,  
25 carbolinyl, cinnolinyl, furanyl, imidazolyl, indolinyl, indolyl, indolazinyl,  
indazolyl, isobenzofuranyl, isoindolyl, isoquinolyl, isothiazolyl, isoxazolyl,  
naphthpyridinyl, oxadiazolyl, oxazolyl, oxazoline, isoxazoline, oxetanyl, pyranyl,  
pyrazinyl, pyrazolyl, pyridazinyl, pyridopyridinyl, pyridazinyl, pyridyl, pyrimidyl,  
30 pyrrolyl, quinazolinyl, quinolyl, quinoxalinyl, tetrahydropyranyl, tetrazolyl,  
tetrazolopyridyl, thiadiazolyl, thiazolyl, thienyl, triazolyl, azetidinyl, 1,4-dioxanyl,  
hexahydroazepinyl, piperazinyl, piperidinyl, pyridin-2-onyl, pyrrolidinyl,  
morpholinyl, thiomorpholinyl, dihydrobenzimidazolyl, dihydrobenzofuranyl,  
dihydrobenzothiophenyl, dihydrobenzoxazolyl, dihydrofuranyl,  
dihydroimidazolyl, dihydroindolyl, dihydroisooxazolyl, dihydroisothiazolyl,

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dihydrooxadiazolyl, dihydrooxazolyl, dihydropyrazinyl, dihydropyrazolyl, dihydropyridinyl, dihydropyrimidinyl, dihydropyrrolyl, dihydroquinolinyl, dihydrotetrazolyl, dihydrothiadiazolyl, dihydrothiazolyl, dihydrothienyl, dihydrotriazolyl, dihydroazetidinyl, methylenedioxybenzoyl, tetrahydrofuranyl, and tetrahydrothienyl, and N-oxides thereof, which is unsubstituted or substituted with one or more substituents independently selected from:

10

- (a) -C<sub>1-6</sub>alkyl,
- (b) -O-C<sub>1-6</sub>alkyl,
- (c) halo,
- (d) hydroxy,
- (e) phenyl,
- (f) trifluoromethyl,
- (g) -OCF<sub>3</sub>;
- (h) -CO<sub>2</sub>R<sup>9</sup>,
- (i) -NR<sup>10</sup>R<sup>11</sup>, and
- (j) -CONR<sup>10</sup>R<sup>11</sup>;

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R<sup>3</sup> is independently selected from the group consisting of:

- (1) hydrogen, and
- (2) C<sub>1-6</sub>alkyl;

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R<sup>4</sup> is selected from the group consisting of:

- (1) C<sub>1-6</sub>alkyl, which is unsubstituted or substituted with halogen, hydroxyl, phenyl or heterocycle,
- (2) C<sub>3-7</sub>cycloalkyl, which is unsubstituted or substituted with halogen, hydroxyl or phenyl, and
- (3) phenyl, which is unsubstituted or substituted with one or more substituents independently selected from:
  - (a) -C<sub>1-6</sub>alkyl,
  - (b) -O-C<sub>1-6</sub>alkyl,
  - (c) halo,
  - (d) hydroxy,
  - (e) trifluoromethyl,
  - (f) -OCF<sub>3</sub>,

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- (g)  $\text{-CO}_2\text{R}^9$ ,
- (h)  $\text{-CN}$ ,
- (i)  $\text{-NR}^{10}\text{R}^{11}$ ,
- (j)  $\text{-CONR}^{10}\text{R}^{11}$ , and
- (k)  $\text{-NO}_2$ ;

10

- (4) heterocycle, wherein heterocycle is selected from:  
benzimidazolyl, benzimidazolonyl, benzofuranyl, benzofurazanyl,  
benzopyrazolyl, benzotriazolyl, benzothiophenyl, benzoxazolyl, carbazolyl,  
carbolinyl, cinnolinyl, furanyl, imidazolyl, indolinyl, indolyl, indolazinyl,  
indazolyl, isobenzofuranyl, isoindolyl, isoquinolyl, isothiazolyl, isoxazolyl,  
naphthpyridinyl, oxadiazolyl, oxazolyl, oxazoline, isoxazoline, oxetanyl, pyranyl,  
pyrazinyl, pyrazolyl, pyridazinyl, pyridopyridinyl, pyridazinyl, pyridyl, pyrimidyl,  
pyrrolyl, quinazolinyl, quinolyl, quinoxaliny, tetrahydropyranyl, tetrazolyl,  
tetrazolopyridyl, thiadiazolyl, thiazolyl, thienyl, triazolyl, azetidinyl, 1,4-dioxanyl,  
hexahydroazepinyl, piperazinyl, piperidinyl, pyridin-2-onyl, pyrrolidinyl,  
morpholinyl, thiomorpholinyl, dihydrobenzimidazolyl, dihydrobenzofuranyl,  
dihydrobenzothiophenyl, dihydrobenzoxazolyl, dihydrofuranyl,  
dihydroimidazolyl, dihydroindolyl, dihydroisooxazolyl, dihydroisothiazolyl,  
dihydrooxadiazolyl, dihydrooxazolyl, dihydropyrazinyl, dihydropyrazolyl,  
dihydropyridinyl, dihydropyrimidinyl, dihydropyrrolyl, dihydroquinolinyl,  
dihydrotetrazolyl, dihydrothiadiazolyl, dihydrothiazolyl, dihydrothienyl,  
dihydrotriazolyl, dihydroazetidinyl, methylenedioxybenzoyl, tetrahydrofuranyl,  
and tetrahydrothienyl, and N-oxides thereof, which is unsubstituted or substituted  
with one or more substituents independently selected from:

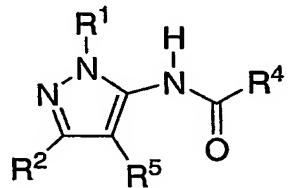
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- (a)  $\text{-C}_1\text{-}6\text{alkyl}$ ,
- (b)  $\text{-O-C}_1\text{-}6\text{alkyl}$ ,
- (c) halo,
- (d) hydroxy,
- (e) phenyl,
- (f) trifluoromethyl,
- (g)  $\text{-OCF}_3$ ,
- (h)  $\text{-CO}_2\text{R}^9$ ,
- (i)  $\text{-NR}^{10}\text{R}^{11}$ , and
- (j)  $\text{-CONR}^{10}\text{R}^{11}$ ;

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and pharmaceutically acceptable salts thereof and individual diastereomers thereof.

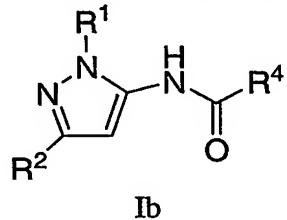
2. The compound of Claim 1 of the formula Ia:



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and pharmaceutically acceptable salts thereof and individual enantiomers and diastereomers thereof.

3. The compound of Claim 1 of the formula Ib:

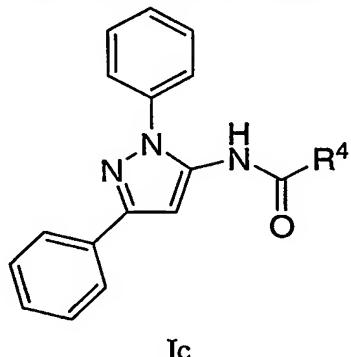


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and pharmaceutically acceptable salts thereof and individual enantiomers and diastereomers thereof.

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4. The compound of Claim 1 of the formula Ic:



and pharmaceutically acceptable salts thereof and individual enantiomers and diastereomers thereof.

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5. The compound of Claim 1 wherein R<sup>1</sup> is hydrogen.

6. The compound of Claim 1 wherein R<sup>1</sup> is phenyl.

7. The compound of Claim 1 wherein R<sup>2</sup> is phenyl.

5 8. The compound of Claim 1 wherein R<sup>3</sup> is hydrogen.

9. The compound of Claim 1 wherein R<sup>4</sup> is phenyl, which is unsubstituted or substituted with one or more substituents independently selected from:

10 (a) -C<sub>1-6</sub>alkyl,  
(b) -O-C<sub>1-6</sub>alkyl,  
(c) halo,  
(d) hydroxy,  
(e) trifluoromethyl,  
15 (f) -OCF<sub>3</sub>;  
(g) -CO<sub>2</sub>-C<sub>1-6</sub>alkyl,  
(h) -CN,  
(i) -NH<sub>2</sub>,  
(j) -NH-C<sub>1-6</sub>alkyl,  
20 (k) -CONH<sub>2</sub>, and  
(l) -CONH-C<sub>1-6</sub>alkyl.

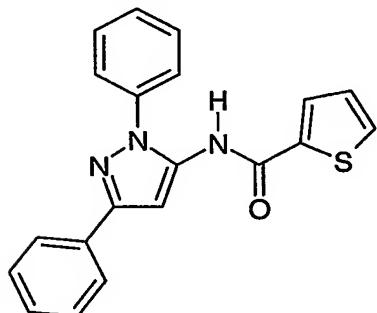
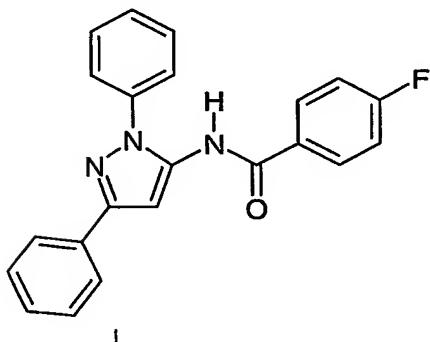
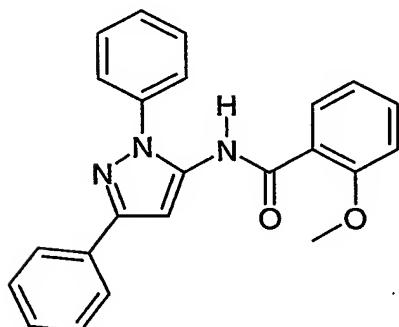
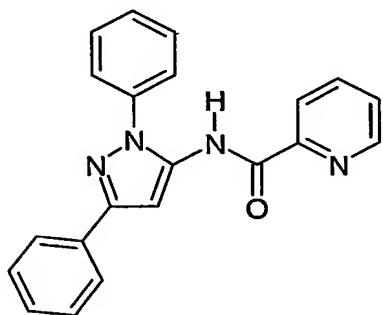
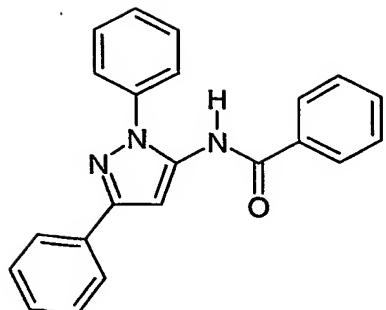
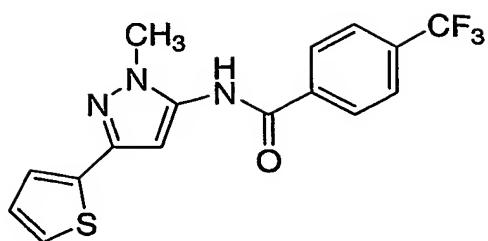
10. The compound of Claim 9 wherein R<sup>4</sup> is phenyl, which is unsubstituted or substituted with halo or -CN.

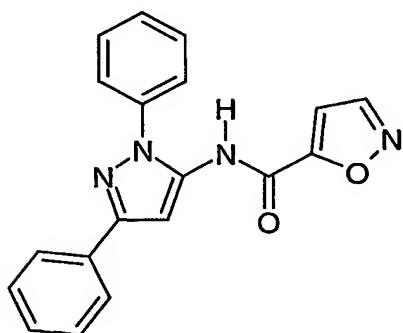
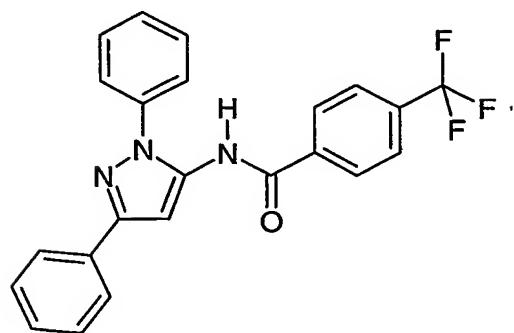
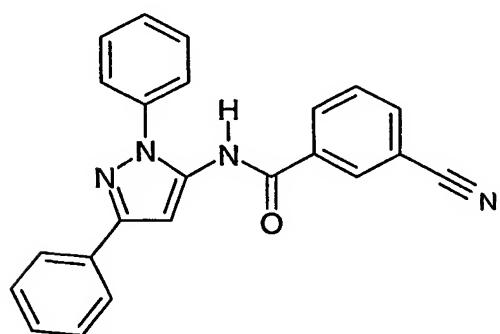
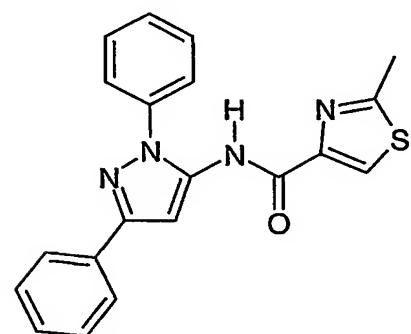
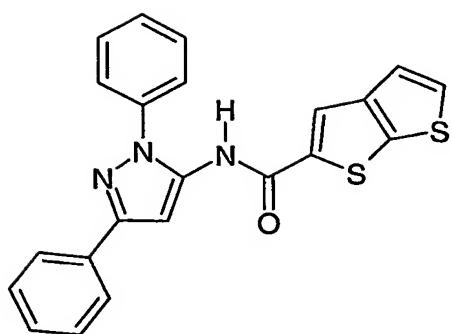
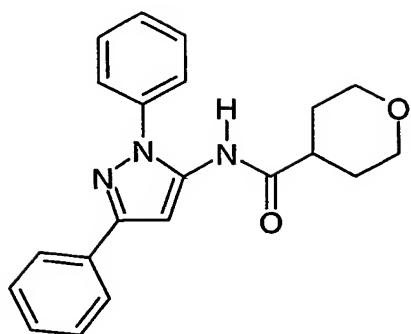
25 11. The compound of Claim 10 wherein R<sup>4</sup> is phenyl.

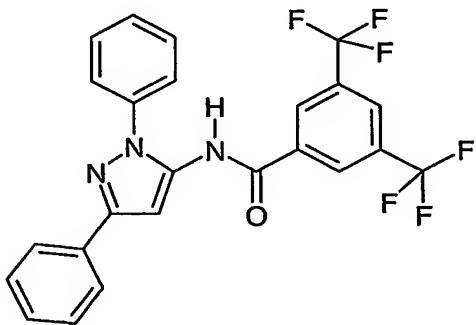
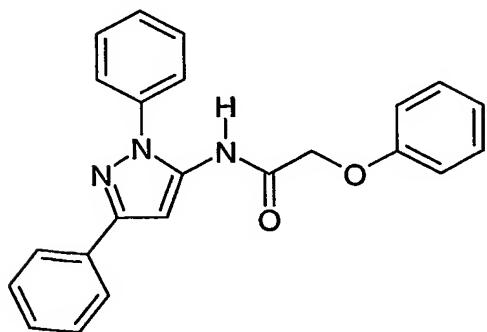
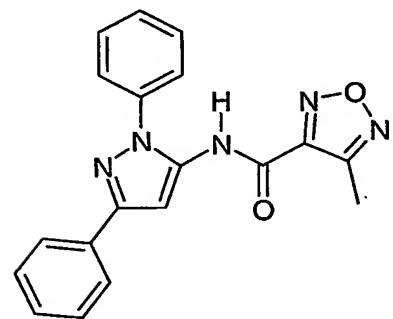
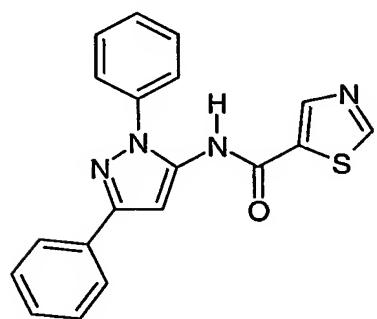
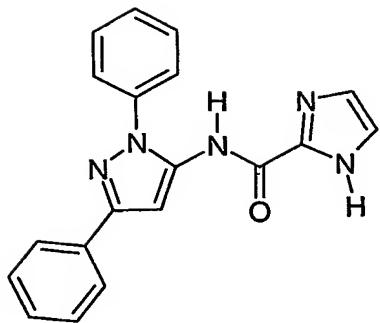
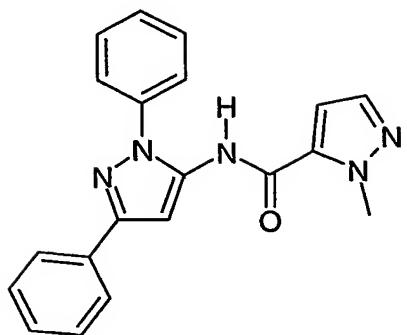
12. The compound of Claim 1 wherein R<sup>4</sup> is pyridyl.

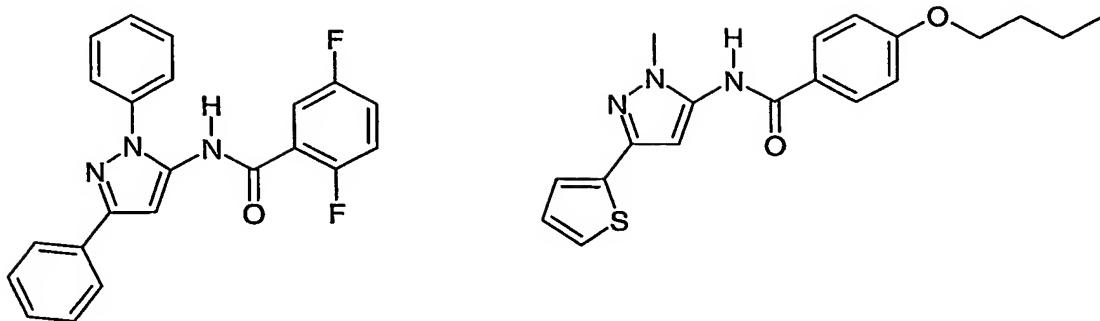
30 13. The compound of Claim 1 wherein R<sup>5</sup> is hydrogen.

14. A compound which is selected from the group consisting of:









and pharmaceutically acceptable salts thereof.

15. A pharmaceutical composition which comprises an inert carrier and a compound of Claim 1.

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16. A method for potentiation or inhibition of metabotropic glutamate receptor activity in a mammal which comprises the administration of an effective amount of the compound of Claim 1.

10 17. A method for the manufacture of a medicament for potentiation or inhibition of metabotropic glutamate receptor activity in a mammal comprising combining the compound of Claim 1 with a pharmaceutical carrier or diluent.

15 18. A method for treating a neurological and psychiatric disorders associated with glutamate dysfunction in a mammalian patient in need of such which comprises administering to the patient a therapeutically effective amount of a compound of Claim 1.

20 19. A method for treating schizophrenia in a mammalian patient in need of such which comprises administering to the patient a therapeutically effective amount of a compound of Claim 1.

25 20. A method for treating anxiety in a mammalian patient in need of such which comprises administering to the patient a therapeutically effective amount of a compound of Claim 1.

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